

CDC Fact Sheet: Meningitis

What is meningitis?

Meningitis is an infection of the fluid of a person's spinal cord and the fluid that surrounds the brain. People sometimes refer to it as spinal meningitis. Meningitis is usually caused by a viral or bacterial infection. Knowing whether meningitis is caused by a virus or bacterium is important because the severity of illness and the treatment differ.

Viral meningitis is generally less severe and resolves without specific treatment, while bacterial meningitis can be quite severe and may result in brain damage, hearing loss, or learning disability.

For bacterial meningitis, it is also important to know which type of bacteria is causing the meningitis because antibiotics can prevent some types from spreading and infecting other people. Before the 1990s, *Haemophilus influenzae* type b (Hib) was the leading cause of bacterial meningitis, but new vaccines being given to all children as part of their routine immunizations have reduced the occurrence of invasive disease due to *H. influenzae*.

Today, *Streptococcus pneumoniae* and *Neisseria meningitidis* are the leading causes of bacterial meningitis.

What are the signs and symptoms of meningitis?

High fever, headache, and stiff neck are common symptoms of meningitis in anyone over the age of 2 years. These symptoms can develop over several hours, or they may take 1 to 2 days. Other symptoms may include nausea, vomiting, discomfort looking into bright lights, confusion, and sleepiness.

In newborns and small infants, the classic symptoms of fever, headache, and neck stiffness may be absent or difficult to detect, and the infant may only appear slow or inactive, or be irritable, have vomiting, or be feeding poorly. As the disease progresses, patients of any age may have seizures.

How is meningitis diagnosed?

Early diagnosis and treatment are very important. If symptoms occur, the patient should see a doctor immediately. The diagnosis is usually made by growing bacteria from a sample of spinal fluid. The spinal fluid is obtained by performing a spinal tap, in which a needle is inserted into an area in the lower back where fluid in the spinal canal is readily accessible.

Identification of the type of bacteria responsible is important for selection of correct antibiotics.

Can meningitis be treated?

Bacterial meningitis can be treated with a number of effective antibiotics. It is important, however, that treatment be started early in the course of the disease. Appropriate

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antibiotic treatment of most common types of bacterial meningitis should reduce the risk of dying from meningitis to below 15%, although the risk is higher among the elderly.

Is meningitis contagious?

Yes, some forms of bacterial meningitis are contagious. The bacteria are spread through the exchange of respiratory and throat secretions (i.e., coughing, kissing).

Fortunately, none of the bacteria that cause meningitis are as contagious as things like the common cold or the flu, and they are not spread by casual contact or by simply breathing the air where a person with meningitis has been.

However, sometimes the bacteria that cause meningitis have spread to other people who have had close or prolonged contact with a patient with meningitis caused by *Neisseria meningitidis* (also called meningococcal meningitis) or Hib.

People in the same household or day-care center, or anyone with direct contact with a patient's oral secretions (such as a boyfriend or girlfriend) would be considered at increased risk of acquiring the infection. People who qualify as close contacts of a person with meningitis caused by *N. meningitidis* should receive antibiotics to prevent them from getting the disease. Antibiotics for contacts of a person with Hib meningitis disease are no longer recommended if all contacts 4 years of age or younger are fully vaccinated against Hib disease (see below).

Are there vaccines against meningitis?

Yes, there are vaccines against Hib and against some strains of *N. meningitidis* and many types of *Streptococcus pneumoniae*. The vaccines against Hib are very safe and highly effective.

There is also a vaccine that protects against four strains of *N. meningitidis*, but it is not routinely used in the United States and is not effective in children under 18 months of age. The vaccine against *N. meningitidis* is sometimes used to control outbreaks of some types of meningococcal meningitis in the United States.

Meningitis cases should be reported to state or local health departments to assure follow-up of close contacts and recognize outbreaks. Although large epidemics of meningococcal meningitis do not occur in the United States, some countries experience large, periodic epidemics.

Overseas travelers should check to see if meningococcal vaccine is recommended for their destination. Travelers should receive the vaccine at least 1 week before departure, if possible. Information on areas for which meningococcal vaccine is recommended can be obtained by calling the Centers for Disease Control and Prevention at (404)-332-4565.

A vaccine to prevent meningitis due to *S. pneumoniae* (also called pneumococcal meningitis) can also prevent other forms of infection due to *S. pneumoniae*. The pneumococcal vaccine is not effective in children under 2 years of age but is

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recommended for all persons over 65 years of age and younger persons with certain chronic medical problems.

Update from October 20, 1999 Press Release:

The Advisory Committee on Immunization Practices (ACIP) has modified its guidelines for use of the polysaccharide meningococcal vaccine to prevent bacterial meningitis, particularly for college freshmen who live in dormitories, a group found to be at a modestly increased risk of meningococcal disease relative to other persons their age.

ACIP Modifies Recommendations for Meningitis Vaccination

The Advisory Committee on Immunization Practices (ACIP) has modified its guidelines for use of the polysaccharide meningococcal vaccine to prevent bacterial meningitis, particularly for college freshmen who live in dormitories, a group found to be at a modestly increased risk of meningococcal disease relative to other persons their age.

At its October 20 meeting, the ACIP, citing results of two CDC studies done in 1998 which identified the slightly higher risk among freshman dormitory residents, recommended that those who provide medical care to this group give information to students and their parents about meningococcal disease and the benefits of vaccination. Vaccination should be provided or made easily available to those freshmen who wish to reduce their risk of disease. Other undergraduate students wishing to reduce their risk of meningococcal disease can also choose to be vaccinated.

The currently available vaccine protects against some types (serogroups) of the bacterium *Neisseria meningitidis* (also called meningococcus), an important cause of bacterial meningitis and sepsis in children and young adults in the United States. A single dose of the vaccine is recommended, and vaccination will decrease the risk of disease caused by *N. meningitidis* serogroups A, C, Y, and W-135. However, vaccination will not totally eliminate risk of the disease because the vaccine does not protect against serogroup B and because, although it is highly effective against serogroups C and Y, it still does not confer 100% protection against these serogroups. In 1998-1999, serogroups C and Y caused about 70% of cases among college students.

Approximately 3,000 cases of meningococcal disease occur each year in the United States, and 10%-13% of patients die despite receiving antibiotics early in the illness. Of those who survive, an additional 10% have severe aftereffects of the disease, including mental retardation, hearing loss and loss of limbs.

On September 30, 1997, the American College Health Association (ACHA), which represents about one-half of colleges with student health services in the United States, released a statement recommending that "college health services [take] a more proactive role in alerting students and their parents about the dangers of meningococcal disease" and that "college students consider vaccination against potentially fatal meningococcal disease." In early 1998, CDC, in collaboration with the Council of State and Territorial Epidemiologists (CSTE) and ACHA's Vaccine Preventable Disease Task Force, initiated two studies to better define the risk of meningococcal disease associated with college campuses. Both studies indicated that freshmen college students, particularly those who

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live in dormitories, constitute a group at a modestly increased risk for meningococcal disease.

More information on meningococcal disease, its symptoms, and the vaccine is available on the CDC website, <http://www.cdc.gov/ncidod/dbmd/diseaseinfo> and the American College Health Association. <http://www.acha.org/special-prj/men/faq.htm>